

## CLAIMS

What is claimed is:

1. Signal processing apparatus comprising:  
 circuitry for digitizing an input signal;  
 a software linearizer for processing the digitized signal to produce a pre-distorted RF signal that is to be subsequently amplified to produce a signal that has reduced intermodulation distortion;  
 5 circuitry for converting the pre-distorted RF signal to an analog signal; and  
 a nonlinear amplifier for amplifying the pre-distorted analog signal to produce an output signal corresponding to the input signal that has reduced intermodulation distortion.
2. The apparatus recited in Claim 1 further comprising:  
 an upconverter for upconverting the pre-distorted analog signal;  
 a linear amplifier for amplifying the pre-distorted signal;  
 a bandpass filter for filtering the pre-distorted signal; and  
 5 a transmit antenna for transmitting the filtered pre-distorted signal
3. The apparatus recited in Claim 1 further comprising:  
 a receive antenna for receiving the pre-distorted signal;  
 a low noise amplifier for amplifying the received pre-distorted signal;  
 a downconverter for downconverting the pre-distorted signal; and  
 5 a channel amplifier for amplifying the pre-distorted signal and coupling it to the nonlinear amplifier.
4. The apparatus recited in Claim 1 further comprising:  
 an upconverter for upconverting the pre-distorted analog signal and coupling it to the nonlinear amplifier;  
 a bandpass filter for filtering the output signal having reduced intermodulation distortion; and  
 5 a transmit antenna for transmitting the filtered output signal having reduced intermodulation distortion.

